REMARKS

Claims 1-2, and 147-149 are pending. The Applicants herein acknowledge the oral election to prosecute the subject matter of Group I as set forth by the Examiner, at this time. The Applicants respectfully thank the Examiner for acknowledging that the pending claims are free of prior art and request the Examiner to reconsider the existing rejections in view of amendments to the claims now presented and the following remarks.

Introduction

Peptidoglycan is a cross-linked carbohydrate polymer that forms layers around bacterial cell membranes. One of its primary functions is to protect bacterial cells from lysis due to fluctuations in internal osmotic pressure. The machinery for peptidoglycan biosynthesis, however, is very highly conserved in both Gram-negative and Gram-positive bacteria, particularly the biosynthetic enzyme MurG. MurG is a glycosyltransferase that transfers GlcNAc from UDP to the C4 hydroxyl of an N-acetyl muramic acid peptide anchored to the cytoplasmic surface of a bacterial cell membrane. The GlcNAc-MurNAc product of the MurG reaction is the minimal subunit of the peptidoglycan polymer that surrounds and protects bacterial cell membranes.

Claim Rejections under 35 USC §112 (2)

All claims now pending specifically characterize the crystallized entity, MurG, as a bacterial membrane associated UDP-glycosyltransferase which mediates peptidoglycan biosynthesis. Accordingly, the Applicants respectfully request the Examiner to with draw the rejection.

Claim Rejections under 35 USC §112 (1)

The Examiner has alleged that the Applicants have failed to meet the statutory requirements for written description and enablement with regard to the subject matter of the pending claims.

The Applicants respectfully remind the Examiner that the Federal Circuit has recently unambiguously clarified their interpretation of the statutory requirement for written description,

i.e., a claimed genus may be satisfied through sufficient description of functional characteristics *coupled with* a known or disclosed correlation between function and structure, or by a combination of identifying characteristics, sufficient to show the applicant was in possession of the claimed genus.[1] The knowledge obtained concerning the MurG crystal structure, for example, has been used by the present inventors to define the heretofore unknown tertiary structure of the MurG protein and to identify the location of the glycosyl donor and glycosyl acceptor binding domains, as well as the location of the amino acid residues that are **invariant in all MurG proteins**. The relative spatial orientations of these residues is expected to be necessarily conserved for the biological function (now required in the claims) in all MurG proteins. The claims now presented particularly require a composition comprising a MurG protein in crystalline form wherein the MurG protein is functionally defined as a bacterial membrane associated UDP-glycosyltransferase which mediates peptidoglycan biosynthesis. Bacterial MurG proteins are very highly conserved proteins. Certain amino acid positions of MurG proteins are almost invariable. Accordingly, claim 2 presented herewith now structurally requires that the MurG protein comprises at least 90% of the residues selected from the group consisting of G14, G15, G18, H19, G104, H124, E125, G190, G191, S192, G194, A195, R261, G263, A264, E269, P281, Q289, N292 and A293 of SEQ ID NO:1. Moreover, newly presented claim 147, for example, requires MurG crystal molecules arranged in a P1 space group with two molecules per assymmetric unit so as to form a unit cell of dimensions a=60.613 Å, b=66.356 Å, c=67.902 Å, α=64.294, β=83.520, and g=65.448.

Since the claimed subject matter is now defined structurally and functionally, and in view of the guidance (METHODS OF CRYSTALLIZATION) provided at page 16 to page 20, for example, of the written description, the Applicants respectfully submit that a person of skill in the art indeed has the information and guidance to generate embodiments within the full generic scope of the claims.

---

[1] The Federal Circuit recently adopted the Written Description Guidelines in Enzo Biochem v. Gen-Probe, Inc.(Enzo II), 296 F.3d 1316, 63 USPQ2d 1609, 1613 (Fed. Cir. July 15, 2002); 66 Fed. Reg. at 1106 (emphasis added). Confirmed in Amgen Inc. v. Hoechst Marion Roussel Inc., 314 F.3d 1313, 65 USPQ2d 1385 (Fed. Cir. 2003).

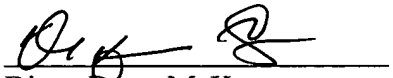
The enablement requirement is met if the description enables any mode of making and using the invention. Moreover, a considerable amount of experimentation is permissible if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed to enable the determination of how to practice the scope of the claimed invention. Johns Hopkins Univ. v. Cellpro, Inc., 152 F.3d 1342, 47 USPQ2d 1705 (Fed. Cir. 1998). Since bacterial MurG enzymes are among the most highly conserved biological molecules and the Applicants have taught how to crystallize and characterize bacterial MurG, i.e., membrane associated UDP-glycosyltransferase which mediates peptidoglycan biosynthesis, the Applicants have indeed provided clear guidance to enable those of ordinary skill in the art to practice to invention now defined.

The Applicants accordingly respectfully request the Examiner to withdraw the rejections under 35 USC §112, paragraph 1.

For all the foregoing reasons, the Applicants submit that Claims 1-2, and 147-149 are in condition for allowance. Early action toward this end is courteously solicited. *The Examiner is kindly encouraged to telephone the undersigned in order to expedite any detail of the prosecution*.

The Commissioner is authorized to charge any deficiency or credit any overpayment in connection herewith to Deposit Account No. 13-2165.

Respectfully submitted,



Diane Dunn McKay
Reg. No. 34,586
Attorney for Applicant

DATE: October 13, 2004

MATHEWS, COLLINS, SHEPHERD & McKAY, P.A.
100 Thanet Circle, Suite 306
Princeton, New Jersey 08540-3662
Telephone: (609) 924-8555
Telecopier: (609) 924-3036

In the Drawings:

Please delete the original sheets FIG.1, FIG.2, and FIG.3.

Please substitute the sheets included herewith FIG.1, FIG.2, and FIG.3 (corrected drawings).